EX PARTE OR LATE FILED

ORIGINAL

Squire, Sanders & Dempsey
L.L.P.
Counsellors at Law
1201 Pennsylvania Avenue, N.W.
P.O. Box 407
Washington, D.C. 20044-0407

Telephone (202) 626-6600
Cable Squire DC
Telecopier (202) 626-6780

Direct Dial Number
(202) 626-6600

May 1, 2000

RECEIVED
MAY 01 2000
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Hon. William E. Kennard
Chairman, Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: *Ex Parte* Presentation of The Boeing Company
ET Docket No. 98-206
RM-9147
RM-9245

Dear Chairman Kennard:

On March 22, 2000, Northpoint Technology, Ltd. ("Northpoint") responded to an interference analysis that was prepared by The Boeing Company ("Boeing") and filed with the Commission on February 16, 2000. As Northpoint acknowledged in its March 22nd filing, Boeing's interference analysis went to "great lengths" to demonstrate conclusively that Northpoint's proposed video distribution service in the 12.2-12.7 GHz band would cause unacceptable interference into Boeing's non-geostationary fixed satellite service ("NGSO FSS") system.[1]

Northpoint's March 22nd response is littered with inaccurate assumptions and misleading arguments, which are addressed in the attached technical discussion. Most importantly, however, Northpoint's March 22nd response concedes the two most critical issues in this proceeding.

First, Northpoint again acknowledges that its proposed service will create exclusion zones where customers will be unable to receive acceptable service from Boeing's NGSO FSS network. Northpoint claims that these exclusion zones will be as small as 200 meters.[2] As demonstrated in the attached analysis, however, Northpoint's exclusion zones will range from two kilometers (at Northpoint's "nominal" power level) to more than 87 kilometers using the maximum power level included in Northpoint's Broadwave applications.

No. of Copies rec'd 0+1
List ABCDE

[1] Letter to Hon. William E. Kennard, Chairman, Federal Communications Commission, from Antoinette Cook Bush, Counsel for Northpoint Technology, Ltd., at 1 (March 22, 2000) ("*Northpoint Response*").

[2] *See id.* at 2.

Second, Northpoint apparently concedes that it would be prohibitively expensive for Boeing to mitigate interference from Northpoint's service inside the exclusion zones. Boeing's February 16th technical analysis demonstrated that each of the interference mitigation techniques proposed by Northpoint – including satellite diversity, natural shielding, artificial shielding and a combination of techniques – would fail to protect Boeing's service and would be prohibitively expensive to employ.[3]

Instead of rebutting Boeing's analysis, Northpoint reiterates its support for "frequency diversity,"[4] which is essentially band segmentation, rather than a method for mitigating interference. Boeing continues to believe that NGSO FSS networks must be able to operate without exclusion zones in the entire 11.7-12.7 GHz band, particularly if the Commission intends to license all or most of the eight first-round NGSO FSS applicants. As ITU technical studies have indicated, co-frequency spectrum sharing between more than three NGSO FSS networks may be extremely difficult. Furthermore, a number of other countries have indicated plans to the ITU to operate NGSO FSS systems. Therefore, in order to facilitate sharing, a substantial possibility exists that the NGSO FSS operators will eventually need to segment the band into two NGSO FSS spectrum sharing groups.

As Boeing has indicated previously, Boeing may be willing to launch its NGSO FSS system and accept the risk to its business plans that the 11.7-12.7 GHz band may later be divided into two NGSO FSS spectrum sharing segments of 500 MHz. It is extremely unlikely, however, that Boeing could accept the financial risk of launching its system if a possibility exists that Boeing may be forced to operate in appreciably less than 500 MHz of space-to-Earth service link spectrum in the United States.

Therefore, Boeing believes that authorizing Northpoint's service is incompatible with any plan to license all, or even most of the NGSO FSS applicants. If the Commission must authorize Northpoint, the Commission should concurrently:

- adopt rules that restrict the interference that Northpoint transmitters will produce into NGSO FSS receivers,
- limit Northpoint to its true spectrum requirements by requiring Northpoint to clearly articulate the services that it plans to provide and
- adopt financial qualification rules for NGSO FSS applicants to reduce the number of NGSO FSS systems to an acceptable number of licensees.

Boeing recognizes the Commission's goal of licensing as many different competitive communication services as possible in the available spectrum. For this reason, Boeing has

[3] *See* Letter to Hon. William E. Kennard, Chairman, Federal Communications Commission, from David A. Nall, Counsel for The Boeing Company, Attachment 1, at 14-20 (Feb. 16, 2000).

[4] *See Northpoint Response*, Technical Attachment, at 18-21.

worked diligently with domestic and international radio spectrum users to develop spectrum sharing techniques that enable Boeing's NGSO FSS system to operate on a co-equal basis with all users of the Ku-band. As Northpoint acknowledges, Boeing's system is so well designed that Boeing's network will not cause interference into Northpoint's proposed system.[5]

In contrast, Northpoint's proposed service will cause unacceptable interference into NGSO FSS networks and will prevent customers from receiving acceptable services from NGSO FSS systems near any Northpoint transmitter. Unless significant technical constraints are placed on Northpoint's proposed service, Northpoint's video distribution system could compromise the development of NGSO FSS networks. Such an outcome would prevent the provision of innovative broadband telecommunication services by NGSO FSS networks and would not further the Commission's goal of maximizing the use of the available spectrum.

Respectfully submitted,

David A. Nall
Bruce A. Olcott
Counsel for The Boeing Company

Cc: R. Craig Holman,
Counsel, The Boeing Company

[5] *See Comments of Northpoint Technology, Ltd.*, ET Docket No. 98-206, Technical Annex at 29 (Mar. 2, 1999).

Northpoint Analysis

This analysis addresses the technical filing submitted by Northpoint Technology, Ltd. ("Northpoint") to the Federal Communications Commission ("FCC") on March 22, 2000 ("Northpoint Response"). Northpoint's analysis responds to an interference analysis prepared by The Boeing Company ("Boeing") and filed with the Commission on February 16, 2000. Boeing's interference analysis considered the interference that would be produced into Boeing's non-geostationary fixed satellite service system ("NGSO FSS") by Northpoint's proposed video distribution service in the 12.2-12.7 GHz band.

Northpoint's response primarily addresses the interference criterion that should be adopted and the performance parameters of each system that should be used in determining the levels of interference that would be produced by Northpoint's system into Boeing's NGSO FSS network. Much of the information Boeing is using for the Northpoint parameters comes from the Northpoint comments to the NPRM. Table 1 of the technical annex[1] in Northpoint's NPRM comments lists the nominal Northpoint parameters and the range of parameters over which Northpoint plans to operate. The range of operating parameters is at least as important as the nominal parameters because it provides the levels of interference that can be expected to be produced into Boeing's system.

Interference Criterion:

In its February 16th interference analysis, Boeing proposed to apply the criteria established in ITU-R Recommendation S.1323 of 10% increased unavailability. In response, Northpoint proposed to use a constant 6 % $\Delta T/T$ plus an additional 10 % increased unavailability on top of that. For anyone involved in the NGSO/GSO sharing deliberations on Recommendation S.1323, this is clearly an unacceptable position. Recommendation S.1323 does not allow a 6 % $\Delta T/T$ on top of the 10 % increased unavailability, it only allows the 10 % increased unavailability.

The criteria in Recommendation S.1323 is appropriate for application in the case of interference from fixed systems to NGSO systems because it is meant to accommodate the time varying nature of the interference. As the NGSO earth station tracks the NGSO satellite, the interference from a fixed Northpoint transmitter will have apparent motion and the level of interference will vary with time due to that apparent motion.

Recommendation S.[4/67] was referenced by Northpoint for use in analysis of NGSO systems. Recommendation S.[4/67] was created to account for the interference between stationary systems with fixed parameters and is therefore inappropriate. In addition, the Northpoint's use of ITU-R Recommendation SF.558 is also not appropriate. The title of Recommendation SF.558 is "Maximum Allowable Values of Interference from Terrestrial Radio Links to Systems in the Fixed Satellite Service Employing 8-bit PCM Encoded Telephony and Sharing the Same Frequency Bands". The Boeing system does not transmit 8-bit PCM encoded telephony. The bit error rate objectives for the Boeing

[1] Northpoint Technical Annex to NPRM comments

IDS forward service link[2] are given in the Boeing application as 10^{-9}, not the 10^{-6} that is used in SF.558.

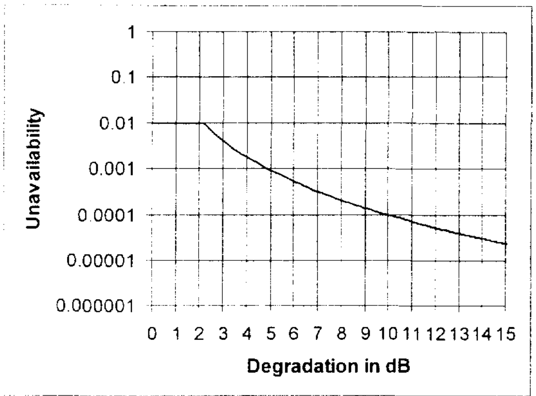
The variation in the interference from the terrestrial service transmitter into the satellite service earth station receiver described in the recommendation is identified in considering (e) as; "that interference from radio-relay systems may vary with time due to the effect of varying propagation conditions;". The time varying nature of the interference from the Northpoint transmitter to the Boeing earth station receiver is not primarily due to varying propagation conditions, but due primarily to the relative angular motion of the interfering source, Northpoint, and the Boeing earth station receive antenna. The receive antenna is tracking the moving NGSO satellite and therefore the level and apparent position of the interference changes with time. This is analogous to the situation of interference from the NGSO satellites into the GSO earth station receiver. In the NGSO/GSO interference case, the position of the NGSO satellite is changing continuously relative to the fixed pointing position of the GSO earth station antenna. If one were to use the main beam of the receive antenna as the reference direction, the two interference conditions of stationary interference with moving receive antenna, and stationary receive antenna with moving interference source would be the same. Since the primary reason for the variation in interference is due to the apparent relative motion of the interference source, and not a variation in propagation conditions, ITU-R Recommendation S.1323 represents the appropriate interference criterion.

Availability Objectives and C/N Degradation:

It has come to our attention that there was an error in the rain model calculation that was used for the integration over the elevation angles in the Boeing analysis. Reviewing the Northpoint comments against the initial Boeing data revealed the error. Due to a software error, a data value was inadvertently changed to an array index. The software has been fixed and the corrected plots and values are provided on the following page.

Figures 1 and 2 represent corrected plots of the availability as a function of C/N degradation for latitudes of 35 and 40 degrees. The calculations have been done for rain zone 'K' assuming an earth station altitude of sea level. Both the previous and revised calculations include the degradation due to the increased noise temperature, which was why the axis is labeled as degradation and not attenuation.

[2] Table 8.4-2, pg 4-5, Signal characteristics for the IDS Forward Service Link Channel



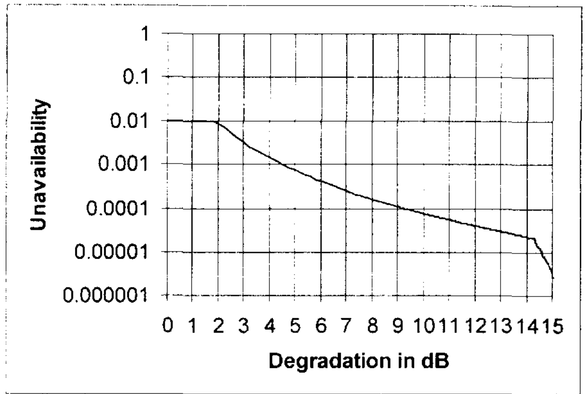


Figure 1: Unavailability at 35 ° Latitude   Figure 2: Unavailability at 40 ° Latitude

At an availability of 99.7 %, a 10% increase in unavailability would be caused by an increase in C/N degradation of 0.1 dB at 35 degrees latitude and a C/N degradation of 0.11 dB at 40 degrees latitude. This corresponds to an Io/No of –16.1 dB at 35 degree latitude and an Io/No of –15.76 dB at 40 degree latitude. This information is repeated in tabular form in table 1.

Table 1: Io/No That Produces 10 % Increased Unavailability

Latitude, degrees N	35	40
Availability, %	99.7	99.7
C/N Degradation, dB (10 % increased unavailability)	0.1	0.11
Io/No in dB	-16.1	-15.8

As a result of the revised analysis, Table 2 presents the analysis of the exclusion zone required.

Table 2: Exclusion Zone Analysis

Transmit EIRP	**dBW**	**-17.50**	**15.00**
Transmit Bandwidth	MHz	24.00	24.00
Transmit EIRP Density	dBW/Hz	-91.30	-58.80
Receive antenna gain to Northpoint	dB	-9.00	-9.00
Receive Noise Temperature	k	231.60	231.60
Receive Noise Density	dBW/Hz	-204.95	-204.95
Io/No Required	dB	-16.10	-16.10
Pathloss Required	dB	120.75	153.25
Frequency	GHz	12.50	12.50
Separation Required	**km**	**2.08**	**87.82**

Boeing Earth Station Antenna Pattern

In its FCC application, Boeing described two types of user terminals, only one of which used a planar phased-array antenna. The second, and more common type, of user terminals described uses a reflector type of antenna[3]. In this configuration, two reflector type antennas are required. The first antenna is required to track the currently assigned satellite, and the second antenna acquires and tracks the satellite that will be used for a handoff. Contrary to the claim of Northpoint, the reference pattern used in the Boeing analysis is therefore appropriate for the anticipated user terminal antenna configuration.

Elevation Angle Distribution:

Contrary to Northpoint's March 22nd response, Boeing did explain its rationale for the elevation angle distributions used in its analysis. Boeing acknowledged that the elevation angle distributions would be shifted to the lower elevation angles somewhat as a result of NGSO/NGSO sharing constraints. However, NGSO sharing studies are not complete. There is no information available on which to base a difference in elevation angle distributions from what was previously presented. The elevation angle distribution plots shown in Figures F and G of Northpoint's analysis are visibility elevation angle distribution plots and do not consider the satellite assignment algorithm that Boeing's application states it plans to use in determining which satellite is providing service to a given area. This is a very important concept. Just because a satellite is visible to an earth station does not mean that it will be providing service to that particular earth station. Boeing's algorithm will assign the highest elevation angle satellite[4] to provide coverage to a given area. This algorithm minimizes interference to the GSO systems, and it will also minimize the interference into potential Northpoint receivers. Boeing's analysis of the elevation angle distribution is appropriate given the data that is currently available.

Back-lobe (Sidelobe) Analysis:

Northpoint claims that there are a number of flaws in the Boeing analysis of the interference produced by the Northpoint system. The Northpoint claims are spurious and display a lack of knowledge of Boeing's application. The following is an explanation of the disputed points.

Receiver Noise Temperature:

The Boeing NGSO satellites use a pattern of 37 spot beams. In this pattern, there are six unique beam types. The parameters of these six beam types are given in Boeing's application. One of the parameters included in the application is the receiver noise temperature, which ranges from 231.2 to 237.1 degrees Kelvin. The differences in the noise temperature for the various beam configurations are due to the difference in the atmospheric noise contribution as a function of the elevation angle. The differences from the 230 degrees Kelvin that was used in the February 16th analysis ranges from 0.022 dB to 0.13 dB with the average system noise temperature, weighted by the elevation angle

---

[3] Boeing FCC application, 8.5.1, "In most cases, user terminals for the Boeing NGSO FSS system will employ conventional reflector antennas."

[4] Boeing FCC application, pg. 14, section 4.2, "The Boeing system will assign user terminals to IDS satellite beams primarily by utilizing whichever beam provides the highest elevation angle."

distributions being 231.6 degrees, or an error of 0.03 dB. This insignificant difference will not influence the unavailability calculation.

Transmit EIRP Density:
In its NPRM comments[5], Northpoint indicated that it plans to use a range of channel bandwidths of 0.001 to 500 MHz. In considering the worst case interference to the Boeing system, it is appropriate to use a bandwidth within this range that is equivalent to the bandwidth of the Boeing signal. Northpoint would have to narrow its proposed range of operations in order to consider guard bands in the analysis. Therefore, accounting for guard bands is not appropriate for this analysis.

Antenna Gain:
Boeing is justified in using the antenna reference pattern in ITU-R Recommendation S.[4/57]. This recommendation was developed with the primary goal of considering the impacts of time varying interference between two systems. Since the present case of Northpoint interference into the Boeing system involves a stationary system – Northpoint's transmitters – and a time varying antenna motion – the Boeing NGSO system – the S.[4/57] antenna reference pattern is appropriate for estimating the interference level to the Boeing system.

Polarization Isolation:
Northpoint would like to claim a polarization isolation of 3 dB between its horizontal polarized transmission and the Boeing circularly polarized receive antenna. Referring back to the Northpoint technical parameters[6], Northpoint uses a range of horizontal, vertical, and <u>circular</u> polarizations. Therefore Northpoint cannot claim any polarization isolation between its transmit antenna and the Boeing receive antenna. Even if Northpoint did want to restrict its range of operation with respect to the transmitter polarization, it would be inappropriate to claim a 3-dB polarization isolation in this case.

The Northpoint interference is primarily into the far sidelobes and backlobes of the Boeing user terminal antenna. The axial ratio of a typical reflector antenna (which determines the polarization of the antenna) in these regions is typically not the same as axial ratio of the main beam. The polarization of a reflector antenna backlobe could range from circular to linear and be at any arbitrary tilt angle. ITU-R recommendations dealing with antenna parameters almost always show that polarization isolation as not being available in the far sidelobes. As an example, figure 8 of Appendix 30 of the Radio Regulations shows no polarization isolation in the far sidelobes for a circular polarized antenna, similar to that being used for the Boeing earth station. (This figure is reproduced here as figure 3.) Therefore, it is inappropriate to consider any polarization isolation between the Northpoint transmit antenna and the Boeing earth station receive antenna, even if they were of different polarization types. It should also be noted that in Northpoint's analysis of its interference to NGSO systems in its NPRM comments, Northpoint does not use a polarization loss term in calculation of interference.

---

[5] Northpoint NPRM comments, March 2 1999 , Technical Annex, pg. 2 Table 1

[6] Northpoint NPRM comments, March 2, 1999, Technical Annex, pg 2 Table 1

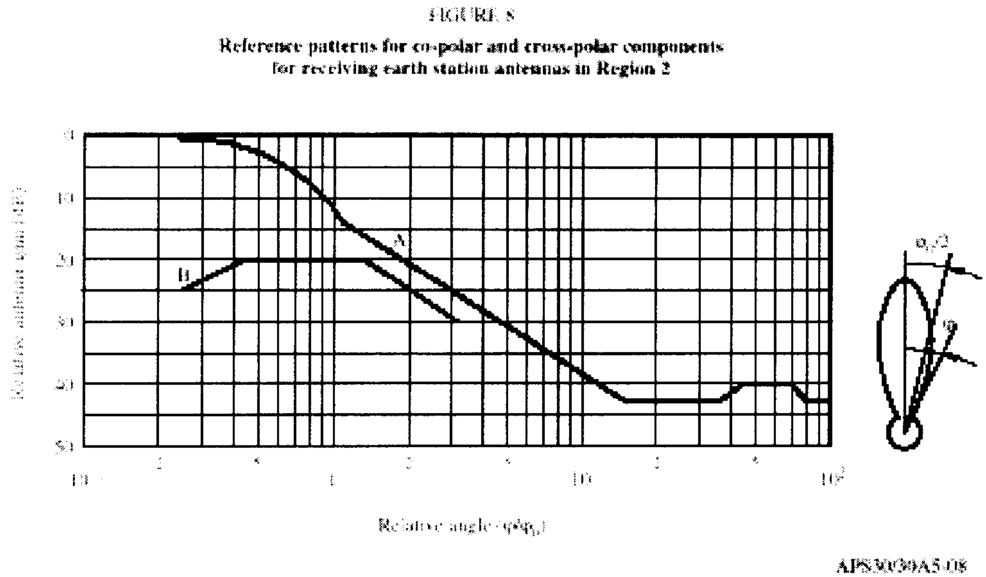


Figure 3: Appendix 30 Receive Antenna Pattern:
Curve A is co-polarization pattern
Curve B is cross-polarization pattern

Northpoint Power Levels:

In figure 2 of Northpoint's March 22nd reponse, Northpoint presents a plot of the received power levels throughout its service area. This plot assumes a transmitter at a height of 150 meters above ground at zero degree tilt angle. However, in its NPRM comments, Northpoint uses a range of antenna heights above ground of 5 to 450 meters, and a range of tilt angles from 0 to 5 degrees. Figure 4 shows a similar plot to that produced by Northpoint for different antenna heights above the ground. As can be seen, the receive power picture near the transmitter changes significantly depending on the transmitter antenna height..

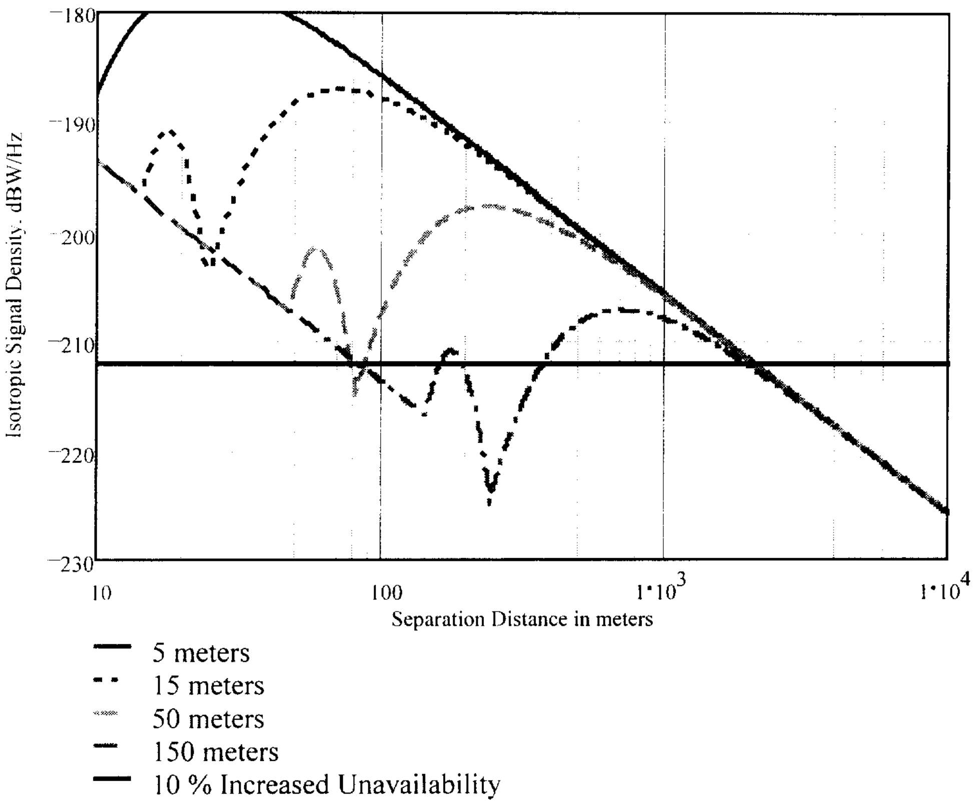


Figure 4: Received Northpoint Powers for Different Antenna Heights at 0° Tilt

Additionally, Northpoint has used a range of transmit EIRP levels from −21.5 dBW to +15 dBW. Figure 5 shows a similar plot of received powers for different levels of Northpoint transmit EIRP with a Northpoint transmit antenna height of 50 meters.

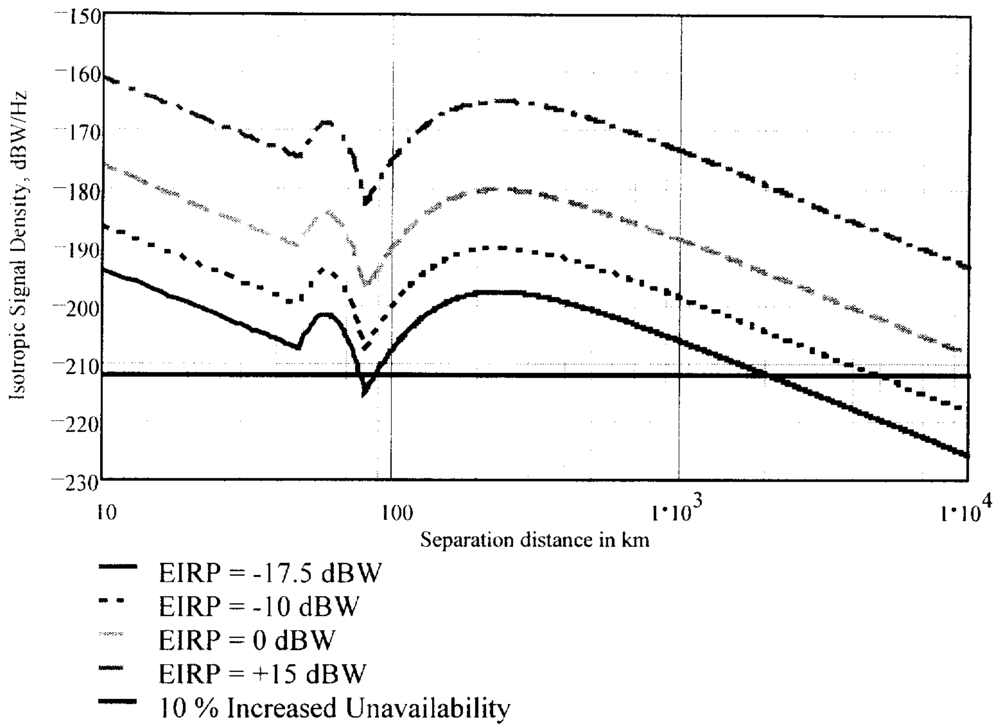


Figure 5: Received Northpoint Powers for Different Transmit EIRPs

As was previously noted by Boeing, an antenna height above ground of 150 meters is equivalent to a 40+ story building. Placement of antennas at these heights necessitates identifying targets of opportunity. It would seem unlikely, due to cost and zoning issues, that Northpoint would construct many such towers independently. Such buildings and towers are unlikely to be found in the suburban and rural areas Northpoint has identified as target markets benefiting by the availability of its system. More realistic assumptions on the placement and height of the Northpoint transmit antennas need to be considered when assessing the interference conditions.

Interference Contours:

Obviously, since Boeing does not agree with Northpoint's assumptions and criteria as described above, Boeing would not agree with Northpoint's interference contours. Table 3 shows the assumptions made by Northpoint in its contour analysis, and the assumptions that Boeing believes are appropriate for such an analysis. The reasons for the differences are as described in the following.

Table 3
Analysis Assumptions for Contours

Item	Units	Northpoint Value	Boeing Value
Boeing Max Antenna Gain	dBi	36.4	36.4
Receiver Noise Bandwidth	MHz	166.7	124.8
Boeing system NoiseTemperature	k	237.1	231.6
Polarization Isolation	dB	-3	0
Boeing Antenna Sidelobe Pattern		29-25log(θ)	S.[4/57]
Northpoint Transmit EIRP Density	dB W/Hz	-95.4	-91.3
Northpoint Transmitter Height	meters	150	5 to 450
Northpoint Transmitter Beam Tilt	degrees	0	0

The bandwidth value used by Northpoint is the channel spacing used in the Boeing NGSO system. Channel spacing is not the same as noise bandwidth. For a QPSK modulated signal such as that used by Boeing, the noise bandwidth is equal to the symbol rate, which is 124.8 Ms/s[7].

As was previously explained, Northpoint has used in its analysis the maximum value of the noise temperature across all Boeing beams, which is inappropriate. The more appropriate value to use is the noise temperature multiplied by the elevation angle probability density and integrated over the range of the elevation angles.

Also as was previously explained, it is incorrect to use a polarization isolation between the Northpoint transmit antenna and the Boeing receive antenna. As such, there will be no polarization isolation between the two systems.

The antenna patterns are roughly comparable as they both use a slope of 29-25log(θ) outside the main beam. In the main beam area, Recommendation S.[4/57] provides a better modeling of the beam.

Northpoint accounts for guard bands and polarization isolation in its computation of the EIRP density. There is no polarization isolation, and given the range of bandwidths (0.001 to 500 MHz) that Northpoint has claimed in its NPRM comments there is no bandwidth difference where guardbands can be applied. Therefore, the EIRP density used by Boeing is the more appropriate. Additionally, the entire range of transmit powers that Northpoint has proposed to use must be considered, not just the "nominal" value. Since the transmit EIRP varies over a 32.5 dB range, the interference conditions will vary significantly.

When considering the interference from a transmitter on a tower, Northpoint has only used a "nominal" condition. This is inappropriate, and the interference must be considered over the entire range of possible tower heights and tilt angles that are planned

[7] Boeing FCC application, pg 45, Table 8.4-2

for use. This is especially true since the interference that the Boeing earth station receiver could see will vary greatly with the height of the Northpoint transmitter.

Northpoint provided a plot of the pointing limitations of the Boeing receive antenna based on the constellation parameters. However, this data is provided for a latitude of 30 degrees only. The southern boundaries of U.S. territory extend farther south than 30 degrees. In considering the interference from a Northpoint transmitter to a Boeing NGSO earth station receiver, it is necessary to examine the interference over the entire range of operating conditions, not just the "nominal" conditions. As an example, Brownsville, Texas is at a latitude of about 26 degrees, the Florida Keys are at a latitude of about 25 degrees, Hawaii is at a latitude of about 19 degrees, Puerto Rico is at a latitude of about 18 degrees. Figure 5 shows a plot of the elevation angle to the satellite in a North direction at various latitudes. The elevation angle to a satellite North of Puerto Rico could be as low as 40.5 degrees, and not the 55 degrees shown in the Northpoint plot.

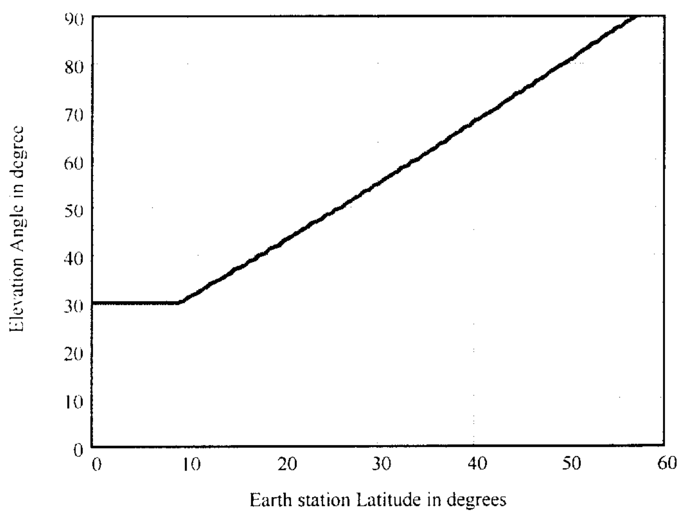


Figure 5: Northern Elevation Angle for Earth Station Latitudes

EPFD Mask:

The interference from a Northpoint transmitter varies due to the apparent motion of the interference source relative to the receiver. In general, the interference is in the far sidelobes and the backlobes of the Boeing earth station receive antenna. However, high levels of interference are also possible when the Northpoint transmitter is in the main beam of the Boeing receive antenna. In the similar case of NGSO interference to GSO earth stations, an EPFD mask was developed to implement the sharing conditions. It should be possible to develop such an EPFD mask for Northpoint interference into the Boeing NGSO system. Boeing is currently working on developing such a mask.

Interference Mitigation:

Northpoint now apparently recognizes that its proposed interference mitigation techniques are not effective in preventing interference with the Boeing system. The only "interference mitigation technique" that Northpoint discusses in its March 22 filing is frequency diversity.

The frequency diversity approach now proposed by Northpoint is nothing other than band segmentation, which by definition would reduce the spectrum available to the eight first-round NGSO applicants pending before the FCC. Sharing negotiations started by these parties would be compromised by the significant change in the allocation of spectrum necessitated by such a "mitigation technique".

Boeing System Efficiency:

There are three components to the efficiency of a communications systems. One is bandwidth efficiency, a second is power efficiency, and the third is the coverage area. Taken together, the Boeing system is as efficient as other satellite communications systems using similar size receive antennas.

When the Boeing NGSO system was designed, it was obvious that it would have to share spectrum with the GSO FSS and BSS systems. There were no planned point-to-multipoint systems in the band. The Boeing system was specifically designed to have minimal impact on the GSO systems already allocated and operating in the band. Boeing has shown that its system will result in an increased unavailability to the GSO BSS systems of less than a 0.7 %, even considering such things as Echostar's claimed 85 degree system noise temperature. For the Boeing system to operate in less spectrum and still maintain the same capacity would require that the EIRP in the reduced operating spectrum would have to be increased. The difficulty with increasing the EIRP is that there are EPFD limits in the spectrum to provide for sharing with the GSO systems, which limit the EIRP levels that a system can transmit. Therefore, any reduction in available spectrum will have a direct impact on system capacity, potentially compromising the system's viability.

Northpoint Rain Margin:

It is interesting to note Northpoint's concern that Boeing has not accounted for the increased system noise in rain conditions, since its link budget does not account for the increased noise in rain conditions. If one examines the link budget provided in its NPRM comments, Northpoint uses the same system noise temperature for both clear sky conditions and for rain conditions.

International Participation:

As Northpoint notes, it submitted two papers to JTG 4-9-11. The first paper, JTG 4-9-11/88, is a brief information paper titled "Characteristics of a Ku-Band Terrestrial Point-to-Multipoint System". The paper is three pages long and describes some of the technical features of the proposed Northpoint system such as EIRP, antenna patterns, receiver noise, etc. The second paper, JTG 4-9-11/125, is also an information paper, and is titled, "Preliminary Analysis of Provisional Power Flux Density Limits for NGSO-FSS Systems to protect Terrestrial Point-to-Multipoint Services in the Bands Near 12 GHz". This paper describes an analysis, which the authors claim, shows that the provisional PFD limits for NGSO sharing with FS systems do not adequately protect Northpoint's video distribution system. JTG 4-9-11 did not agree with this assessment as it adopted the provisional PFD values, which are contained in the CPM report, 3.1.4.1.1 "Protection of the fixed service in the 10.7-12.75 GHz band". These information papers were introduced by Northpoint in the Summer of 1998, but Northpoint did not continue its participation within the international community on interference issues.

Northpoint Proposed PFD:

While Boeing appreciates Northpoint attempt to show that the Boeing system has a lower interference to terrestrial systems than was claimed in the Boeing application, Boeing does not agree with Northpoint's analysis. Northpoint's analysis shows that there are only three CDMA codes per carrier, and bases its analysis of interference on that value. However, the Boeing system transmits on both polarizations with three codes per polarization. Since the interference from the Boeing satellite transmission is into the sidelobes of the terrestrial system antenna, the sum of both polarizations is used to determine the effective interference level[8], which is shown in the Boeing license application as being above the –158 dBW/m2-4 kHz level.

[8] ITU-R Recommendation F.1245, Note 7 indicates that polarization isolation can only be taken into account in cases of main beam coupling.